Volunteer Firemen

MAY 1939

NATIONAL FIRE PROTECTION ASSOCIATION INTERNATIONAL

60 Batterymarch Street Boston, Massachusetts

International

PLANES CRASH AND FIRE TWO DWELLINGS

A NEWS cameraman while in the air to make pictures of the launching of the new U. S. Airplane Carrier "Wasp" at Fore River shipyard snapped this unusually dramatic picture just after a navy plane had crashed into an East Braintree, Mass., dwelling. As indicated by the arrows, the plane tore off a corner of the roof of the house in the foreground (right arrow), bounced so forcefully on the road that it made a considerable trench (left arrow), and caromed through the hedge with a shower of gasoline and oil into the small dwelling on the other side. These flammable liquids plus the highly combustible airplane fabric with which wings and fusilage were covered resulted in the house being engulfed in the mass of flames shown in the picture before the fire department had even been called. Yet, as shown in the inset, the house was saved from complete destruction by fast work on the part of the fire department. Damage to the dwelling was estimated at $2,000.

This fire, and another like it, was a result of a collision of two planes during maneuvers 1500 feet up. While changing from a step like formation, to a V formation, they locked wings, broke apart, and streaked toward the earth. They crashed a quarter of a mile apart, each setting fire to a dwelling. In the plane which set fire to the house pictured, both fliers remained with their ship and were killed in the crash and fire. One of the fliers in the other plane attempted a parachute jump a few seconds before it crashed. His body hit the ground before the chute opened and he was killed. He was found embedded in the earth of a back yard a scant 300 feet from the house into which the plane crashed. All occupants of the dwellings involved were able to escape.

Response to the alarms was seriously impeded by hundreds of spectators at the launching who saw the crash and tried all at once to get to the scene by automobile. Yet the department was able to save one of the houses and prevent exposure fires from the other. The house in the picture all ablaze just after the crash looks doomed, but the insert picture shows how much an alert fire department is able to save even under the most unusual and unfavorable conditions.

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Outside Aid

WAYS OF HANDLING PROBLEM OF THE OUT-OF-TOWN FIRE

Practically all fire departments have the problem of outside aid. Two states, Louisiana and Arkansas, recently published studies of the problem. The Arkansas study is entitled, "Outside Fire Service in Arkansas" by William D. Hopson and Henry A. Ritgerod of the Bureau of Municipal Research of the University of Arkansas, with the assistance of Assistant Chief Carl S. Smalley, Field Instructor of the Arkansas State Fire College. It consists of 36 pages mimeographed, and may be obtained from the Bureau of Municipal Research, University of Arkansas, Fayetteville, Arkansas, for $1.00. The Louisiana study is entitled, "Whose Fire Is It?—An Analysis of the Problem of Fire Protection in Suburban, Village and Rural Areas of Louisiana," by Charles S. Hyneman and Paul Beckett, assisted by Jesse H. Bankston and Joseph W. Reid, Jr., of the Bureau of Government Research of Louisiana State University. It is a 24-page printed pamphlet and may be obtained from the Bureau of Government Research, 8 Leche Hall, University, Louisiana. Its price is 25 cents for one copy and 10 cents for each additional copy.

The accompanying text is from that part of the Louisiana publication which describes how communities in various states have dealt with the problem.

LOUISIANA cities are not the only ones that supply fire protection, free of charge, to their neighbors. The practice is common in all parts of the nation. A recent survey of sixty-one Kentucky cities, for instance, shows that twenty of them "regularly send their fire apparatus beyond the city limits" and make no charge for the service. A check of fifty-five Virginia cities reveals that fully one-half of them go when and where called, and ask no compensation.

It may be that people in other states are no more alive to this problem than the mayors and fire chiefs of Louisiana. They have, in any event, made more progress toward a solution. A number of different arrangements have been devised to relieve the city of its burden, or to supply some compensation for the service which it provides. The following are the more noteworthy: (1) An existing rural government unit is authorized to provide fire protection. (2) Special fire protection districts are created. (3) An optional township-special-district plan is provided. (4) Rural government units contract with cities for fire protection. (5) Individual property owners contract with cities for fire protection.

Fire Protection a Township Function

IN the New England states the town or township is the principal rural local government unit. In many other northern states it shares important governmental functions with the county. In size the township compares roughly with the Louisiana ward.

In at least a dozen states (including Massachusetts, Michigan, Ohio, and Pennsylvania) townships have been authorized to provide fire protection, either out of the general fund or through special taxation. The laws usually permit the township officials to choose between several alternative methods of providing protection. A township may organize, equip, or maintain its own fire department; it may join with another township in organizing a fire unit; or it may contribute to the equipment and support of an existing township, village, or city fire department, receiving fire protection services in return.

In several of these states a popular vote is required before the township may launch a fire protection program; in some, a popular vote determines what kind of arrangements shall be made for the service. In Wisconsin popular approval is necessary before the township may organize its own unit; township officials may contract with other governmental units for protection, however, without a popular vote. In three states (Indiana, Kansas, and Ohio) the power to expend money for fire protection is vested exclusively in the township officials; no popular vote is required on any question connected with the fire program.

In some states there is a limitation upon the amount which the township may spend in any one year for fire protection. Michigan, for instance, prescribes a maximum of $10,000 for the purchase of fire-fighting apparatus. Iowa and Pennsylvania limit the special tax which may be levied for fire purposes—in Iowa the maximum levy is one-fourth mill.

In selecting the township as a fire protection unit, these states chose the smallest rural unit which was already organized for government purposes and vested with power to tax. The ward is the Louisiana unit most comparable to the township in area and population. The ward is not organized for general governmental purposes, however. The smallest rural unit in Louisiana which performs general government functions is the parish. But the parish, unlike the typical township, extends over far greater area than can be served effectively by a single fire unit.

The Fire Protection District

THE special district, created to perform a particular function, is a familiar device in Louisiana. At least a dozen states (including California, Illinois, Massachusetts, and New York) provide for creation of fire protection districts. In most of these states a majority of the electors or property owners of the area concerned must indicate their desire for a district by petition or ballot: the same method is also utilized for dissolution of the district.

The governing body of the district is a popularly elected board in some states (California, New York, and Oregon); in Illinois the district's affairs are managed by a board of trustees appointed by the county judge.

Fire protection districts are empowered to levy and collect taxes to be used for fire protection; in Illinois, New York, and Oregon they are also authorized to issue bonds. A limitation upon the amount a district may spend is usually imposed. Illinois, for example, sets a tax limit of five mills and an indebtedness limit equal to five per cent of the property valuation of the district. In California the maximum levy for any single year is 1 percent of the assessed valuation for equipment, and one-half of 1 percent for operation.

Fire protection districts are authorized to establish their own fire-fighting units; to contract with other municipalities or districts for protection; and to furnish aid to other districts or communities. Provision is usually made for changes in district boundaries and for annexation of contiguous territory.

The Optional Township-Special District Plan

AT least three states (Connecticut, Massachusetts, and New Jersey) permit local people to choose between the township and a special district as a unit for fire protection. In each of these states the district, if this method is chosen, must be laid out with reference to township boundaries; either the district must coincide with a township or lie wholly within a township.

In Connecticut the township may establish a township fire department and vote taxes for its support, or it may establish one or more fire districts composed of the territory surrounding particular cities or villages. No district may be formed without a favorable vote of

The fire department of Oceanside, N. Y., has the largest membership in the N.F.P.A. Volunteer Firemen's Section. The photograph of the department reproduced above is one sent in recently with their membership renewal for the entire 143 members of the department. Oceanside is in Nassau County, on Long Island, an incorporated village of 6500 population. The department dates from 1900, has 5 companies.

the taxpayers of the proposed district, and the taxpayers in such districts may choose the officers and vote the tax levy for fire protection. Massachusetts has a somewhat similar arrangement. In both Connecticut and Massachusetts, contiguous territory may be annexed to a fire district upon the petition of a majority of the inhabitants of the territory seeking to be annexed.

In New Jersey the voters of any township are authorized to appropriate funds for fire protection; the amount of the first appropriation must not exceed $5,000, and any subsequent appropriation is limited to a maximum of $1.00 per inhabitant. An alternative method is for the township committee, upon petition of property owners, to establish one or more fire districts within the township. Provision is made for the popular election of a board of fire commissioners, and for annexation of new territory to the district.

Contracts between Cities and Rural Government Units

A FEW Louisiana cities have entered into agreements with their respective parishes whereby the city receives compensation in some fashion for the fire protection which it supplies to unincorporated territory.

A few states have clearly established the legality of such agreements by enabling legislation.

The statutes which fall in this category usually confer a broad discretion upon the officials of the village, township, county, or fire district to contract with neighboring cities or towns for fire protection. Some states, however, have imposed limitations of one kind or another. Thus the Michigan act forbids any township to appropriate annually more than $750 for this purpose.

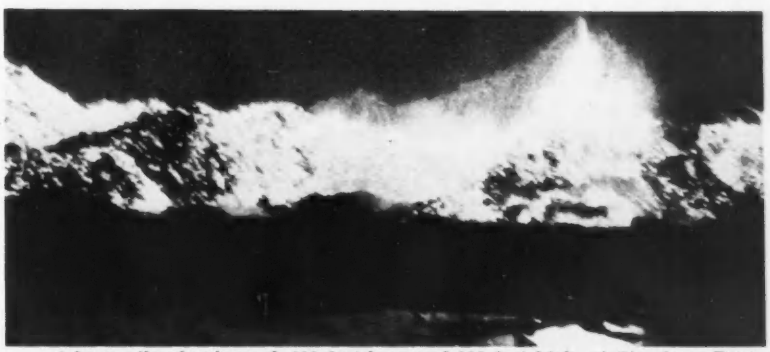
Under these statutes a number of contracts have been negotiated which make the fire equipment of city, township, or fire district available to people in neighboring territory. All kinds of charging systems are to be found. Bexley, a wealthy suburb, pays Columbus, Ohio, a flat annual rate of $17,000. Rockford, Illinois, charges, for each piece of apparatus, $35 for the first hour and $25 for each succeeding hour. Milwaukee, Wisconsin, also charges on a time basis but the fee is much greater—$150 for the first hour and $100 for each additional hour. Cleveland, Ohio, charges a flat rate of $350 for each run. Many cities (Minneapolis, Minnesota, for instance) scale the charges according to the type of apparatus which is sent out. Where the charge is made per call—not a flat monthly or annual payment—it is common to require the village, fire district, or other contracting unit to post a bond.

Contracts between City and Individual

THE practice of charging the victim of a fire for the use of fire equipment seems to be increasing. In a few states legislation authorizes the practice. A Minnesota statute of 1929, for instance, provides that "The body or person having charge of a municipal fire department shall have authority to contract with other municipalities or private groups for compensation for services rendered in fighting fires as herein provided. The compensation agreed shall be a legal charge and collectible by the municipality rendering such services in any court having competent jurisdiction." (Minnesota Session Laws, 1929, ch. 232, sec. 2.)

The wide variation, noted above, in respect to methods of charging neighboring communities for fire service, is duplicated in the contracts between cities and individual property owners. Some municipalities make a flat charge per trip, others grade the fee according to the apparatus put in use; many scale the charge on a time basis; the requirement of a deposit is frequently found; here and there a flat monthly rate is paid. A firm outside of Dayton, Ohio, pays that city $100 per month in addition to $100 for each piece of apparatus, each trip.

IN working out a program of fire protection for unincorporated areas, three basic considerations must be kept in mind: (1) adequate service must be made available for those who need it; (2) the cost of protection must be placed upon individuals or communities according to some studied notion of who ought to bear it, and not left to chance; and (3) the fireman ought to be given a certain degree of security from the dangers of his trade.



A huge pile of pulpwood, 800 feet long and 100 feet high, at Ste. Anne Paper Company plant, Beaupre, Quebec, burned in February with a loss over $500,000. Hydrant protection was inadequate, and monitor nozzles were not provided. Fire departments from three cities worked at the fire, but were able to save only about 5,000 cords, 2,000 of which were removed during the fire.

Oil Plant Fires

NATIONAL EXPERT'S ANSWER TO FIRE CHIEF'S INQUIRY ON THE SUBJECT

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It is entirely natural that this succession of fires should cause many fire chiefs to review the circumstances presented by the problem of fighting similar fires in the tanks at bulk oil and gasoline distributing stations in their own cities. While the Linden plant involved more tanks than would be found at the ordinary bulk station, the fundamental fire fighting problems are the same. Every fire chief may well take stock of available supplies of foam and other facilities for fighting this type of fire.

Chief Edward A. McHugh, of Louisville, Kentucky, is one fire chief who was recently moved to do so. He wrote the N.F.P.A. for suggestions. His inquiry was considered of so much general interest that it was referred for reply to the Secretary of the N.F.P.A. Committee on Flammable Liquids, H. E. Newell. Mr. Newell, Assistant Chief Engineer of the National Board of Fire Underwriters, is a national authority on oil fire protection. His letter to Chief McHugh which follows gives information on the oil fire problem nowhere else available in such concise form. It is all material which is of great practical value to fire departments in fighting oil plant fires.

He refers to the N.F.P.A. Suggested Ordinance Regulating the Use, Handling, Storage and Sale of Flammable Liquids and the Products Thereof, which is the official N.F.P.A. standard on this subject, and has been largely used as a basis of local and state legislation. A city which wants to adopt appropriate ordinance requirements to carry into effect the measures described by Mr. Newell for the construction and spacing of tanks, and the provision of vents, dikes, and foam and other protection, should adopt the provisions of this recommended ordinance.

Chief Edward A. McHugh
Fire Department,
Louisville, Ky.

Dear Chief:

I sense from your letter that the Linden fire has served to direct your attention to the possibility of fires at some of your own storages and possible fire control weakness due to the limited foam chemical storage on hand, and the material time that would elapse before an additional supply could be obtained.

A foam system employing fixed connections is of course important, but such a system alone is by no means the complete answer to the protection problem of oil storage. One need only study the stories of the Linden, Wellsville, and a host of other disastrous oil fires to verify the truth of this. The prevention of serious oil fires is dependent upon a series of factors which taken together make up a chain of protection features. These features form a yard stick which can be applied to any oil storage plant and with little difficulty permit a quick appraisement of the degree of hazard which may exist. These are briefly treated in the following paragraphs.

1. **Construction.** The design and construction of the tank itself is of pronounced importance because stability and ability to withstand the stresses built up by great heat such as created by an exposure fire are highly essential.

Mr. Newell's letter refers to portable foam applicators. Here are some being used in a test at an oil field. Fire fighters are protected by shields.

This involves a consideration of the character of liquid to be stored, the dimensions of the tank and its capacity, the allowable stress in the steel plates making up each ring; the spacing of rivets and joint efficiency, the height of each ring and the factor of safety afforded. The N.F.P.A. and National Board regulations provide a proper design formula, and a mainly similar one is provided by the American Petroleum Institute.

If welded construction is employed, the specifications of the American Welding Society for welded oil storage tanks should be complied with.

If there is any question of the character of the sub-surface strata and the consequent bearing capacity of the soil, borings should be taken over the site in order to determine whether a pile foundation should be resorted to.

2. **Vents.** These are of two kinds, (1) breather or working vents, and (2) vents for the relieving of pressure in emergencies such as exposure fires.

The breather or working vent must be big enough to take care of the maximum pumping in and pumping out rate and further safeguard against the development of vacuum and resultant tank collapse due to rapid cooling and reduction of interior temperature over a short period. The formula is rather complicated, but roughly the vent should be about the same size as the fill pipe.

The emergency vent, as stated previously, is intended to relieve the pressures created by exposure fires. These facilities may be provided by a weak seam at the eave line in the case of vertical tanks where the pitch of the roof is less than 2½ inches in 12 inches; otherwise, a series of circular vents must be provided. Section 48A of the N.F.P.A. Suggested Ordinance on Flammable Liquids contains a table which specifies the number and diameter of such vents required for any given case.

3. **Tank Spacing.** This is an important factor because it determines whether there is going to be congestion. The spacing requirements in the N.F.P.A. Ordinance are reasonable. These distances should not only be sufficient for the laying of pipes between tanks, inspection, etc., but also enough for the erection of dike walls, and to permit fire fighting operations.

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The Cities Service Oil Co. fire, Linden, N. J., Oct. 12-13, 1938. Gasoline, kerosene and naphtha, released by the tank explosions at the start of the fire, quickly spread around the tanks. The tanks were close together, inadequately vented, were not provided with dikes (the one dike provided had not been properly maintained), and not equipped with fixed foam connections. Twenty-one tanks were involved, with loss estimated by the company at $300,000.

4. Dikes. The dike more than any other one thing controls the spread of fire. The N.F.P.A. Ordinance regulates its construction and capacity. One special fact of importance is emphasized, however, and that is the need of placing each large tank in a separate dike; only very small tanks should be grouped in a single dike. The practice of many large companies of grouping all or a good part of their tanks regardless of size in a single dike cannot be too strongly condemned. This only increases by many times the difficulty of the fire department under fire conditions.

5. Protection. If the foregoing features have been properly observed, the oil industry takes the stand that there is no real need for a foam system with fixed connections to each tank. Oil men also take the stand that the fire frequency where the foregoing precautions have been observed is so slight as to render uneconomic the installation of such a system. In a refinery or tank farm, all that is needed, according to them, is a few portable generators and a supply of foam chemicals. This may be correct in theory, but the fact remains that fires do occur even in new tank storages. Tanks originally well built are not properly maintained; it is fairly common to find after a tank has been gauged, that the thieving or gauge hatch covers have been left open, thus permitting the escape of vapor and possible ignition of vapor by any static discharge which might occur.

Experience has proven that unless fixed foam connections are made to each tank, the value of the foam under fire conditions is very greatly reduced; much is carried away by the up-draft of the fire, some actually consumed or broken down and much actually misdirected due to inability of the firemen to get close enough to place the stream where needed.

Portable mixing columns or applicators are of some value, but if the fire gets a good start, the temperatures are frequently so great as to entail great loss of time before the column can be placed in position on the tank. It is recognized that on existing tanks the making of fixed connections introduces some seemingly insurmountable problems—an example is the danger incident to doing hot work (welding or riveting) on a tank that has contained flammable liquids. This is true, but at least it will not apply to tanks equipped with swing pipes. Where these latter are provided it is a simple matter to extend a tee from the swing pipe connection to the outside of the dike, terminating with a 2½-inch hose connection. This permits connecting to a portable foam generator and discharge to tank interior through the swing pipe.

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N.F.P.A. Committee on Flammable Liquids

New York, N. Y.
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March 14, 1939

MAKING USE OF A "Water Thief"

ALL too often fire departments come up against situations where they must make a limited water supply cover several positions at a fire. The amount of water available may supply one powerful 2½-inch hose stream but not much more. In such a case a form of gated wye called a "water thief" may be placed in the 2½-inch line near the fire to bleed off enough water to supply one or two 1½-inch streams and still leave a reasonably effective 2½-inch line.

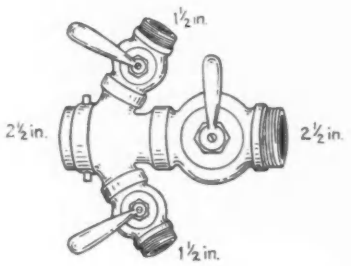
A common form of water thief has two 1½-inch outlets and one 2½-inch outlet. For greatest convenience both the 1½-inch outlets and the 2½-inch outlet should have independent gate valves so that the supply may be turned on and off in the various lines without interrupting the main supply to all of the streams connected to the water thief.

Situations where it is possible to get only enough water for one ordinary fire stream from 2½-inch hose are quite often encountered.

Here are some typical examples: (a) Hydrant located a long way from the fire causes pumper to operate at high pressure, reducing the discharge. (b) Insufficient hose available for more than one line. (c) Hydrant located on small dead-end main. (d) No hydrants available and long line must be laid to brook or pond.

Some fire fighters might say, "Where there is only water enough for one good stream that is all that should be used." However, in most serious fires it is important to have small streams covering strategic positions to prevent the spread of the fire. With only one powerful stream operating the fire may spread out of control in some other direction. For most inside fire fighting several 1½-inch lines can often be a lot more effective than a single 2½-inch line.

Example of a fire where a water thief would be valuable would be a serious



cellar fire which was working up through several partitions. The main 2½-inch line might be ordered to make the basement and the 1½-inch lines taken from the water thief could be used to check the fire in the walls and ceilings. In other instances where the 2½-inch line is needed on the main fire the 1½-inch lines may be invaluable in protecting exposures.

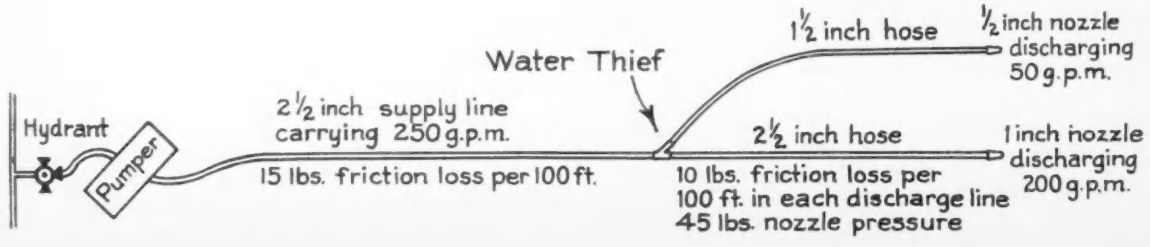
Even where water supplies are not limited, many inside fires are controlled by 1½-inch lines supplied from a line of 2½-inch hose. While there are several types of connections in use for supplying these leader lines, many departments prefer to use a water thief for this job because should a big line be needed it can be quickly supplied from the 2½-inch outlet on the water thief without shutting down the smaller lines.

In fires in dwellings, apartment houses and other occupancies where more than two 1½-inch streams are wanted, additional streams may be taken from a single 2½-inch supply line by connecting together two or more water thief devices. If no 2½-inch line is to be used from the water thief a reducing wye may be attached to the 2½-inch outlet to supply several additional 1½-inch lines. Six 1½-inch lines supplied in this manner would be approximately equal to a single 2½-inch line discharging through a 1¼-inch nozzle.

IT IS important to remember that where both 1½-inch and 2½-inch streams are being supplied by a single 2½-inch line it is best not to use larger than a 1-inch nozzle on the 2½-inch line. If a larger nozzle is used on the main 2½-inch line while also supplying 1½-inch lines, either the nozzle pressure will be low or the total flow will be too great for a single 2½-inch feed line without excessive friction loss. The 1½-inch lines from the water thief should not have larger than ½-inch nozzle tips. These will throw 50 gallons a minute at 45 pounds pressure.

Take for example this layout: one 2½-inch line with 1-inch nozzle tip and one 1½-inch line to a ½-inch tip. Consider first the line between the nozzles and the water thief. Flow in the 1½-inch line will be approximately 50 gallons per minute. Friction loss for such a flow in 1½-inch hose is 10 pounds per 100 feet. Flow in the 2½-inch line will be 200 gallons per minute. Friction loss for such a flow in 2½-inch hose is also 10 pounds per 100 feet.

With one 2½-inch and one 1½-inch line from a water thief discharging at 45 pounds nozzle pressure the feed line from the pumper will be carrying 250 gallons per minute making the total flow equal to a single stream from a 1⅛-inch tip at the same pressure. Accordingly the friction loss in the supply line will be 15 pounds per 100 feet of hose. When two 1½-inch lines and a 2½-inch line are supplied by a water thief, the total discharge of the three streams will be 300 gallons a minute. This is about the same as that of a single 1¼-inch nozzle and the friction loss will be a little over 20 pounds per 100 feet of hose. Where small pumpers (those under 600 g.p.m.) must supply long lines to a water thief feeding two 1½-inch lines and a 2½-inch line, it may be necessary to use a ⅞-inch nozzle tip on the 2½-inch line to keep down the total discharge.


1½ inch hose
½ inch nozzle discharging 50 g.p.m.
Water Thief
Hydrant
Pumper
2½ inch supply line carrying 250 g.p.m.
15 lbs. friction loss per 100 ft.
2½ inch hose
1 inch nozzle discharging 200 g.p.m.
10 lbs. friction loss per 100 ft. in each discharge line
45 lbs. nozzle pressure

THEY "ROLL"... IN THE MACK PLANT FIRST!

Before any Mack fire apparatus "rolls" out to its first alarm, it has been thoroughly pre-tested in Mack's own great factories. Mack Thermodyne engines, for instance, are subjected to two grueling tests on dynamometers—between which tests they are dismantled and inspected. This 16-hour test explains why Mack engines need no "breaking in."

At the left, Mack Thermodyne engines are shown being dismantled between dynamometer tests.

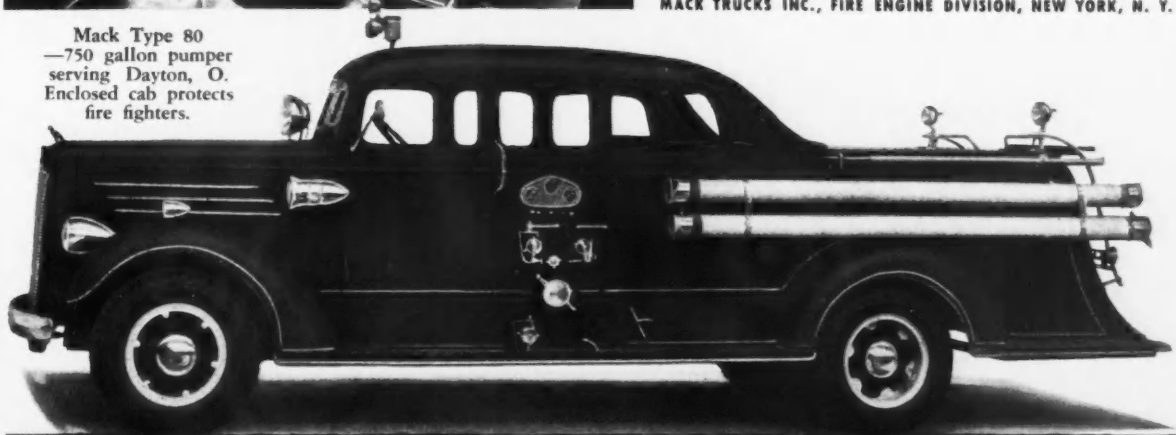
Below, generator grinding of helical teeth on case-hardened timing gears. Remember, Mack is the only manufacturer of fire apparatus to build, in its own plants, engines—transmissions—front and rear axles—brakes—clutches—steering gears—frames—sheet metal parts and bodies.

Mack

Left, testing Mack case-hardened crankshaft for dynamic balance. Illustrated below is the new Mack Type 19—"pocket battleship" of modern fire-fighting equipment. Powered by the Mack Thermodyne—developed by Mack especially for fire service after eight years research.

MACK TRUCKS INC., FIRE ENGINE DIVISION, NEW YORK, N. Y.

Mack Type 80 —750 gallon pumper serving Dayton, O. Enclosed cab protects fire fighters.



MACK HAS THE FACILITIES TO BUILD THE FINEST IN FIRE APPARATUS... AND DOES!

Volunteer Firemen

Volume 6 Number 5

Published by the National Fire Protection Association, a voluntary non-profit organization, 60 Batterymarch Street, Boston, Mass.

Franklin H. Wentworth Managing Director
Percy Bugbee Assistant Managing Director
Robert S. Moulton Technical Secretary
Horatio Bond Chief Engineer
Warren Y. Kimball Fire Record Department
Strafford Wentworth Associate Editor

May, 1939

THE 43rd annual meeting of the National Fire Protection Association will be held this month at Hotel Stevens, Chicago, Ill. The sessions cover five days, May 8 to 12.

Nearly every item on the program will be of interest to volunteer firemen, and anyone that can make the trip is cordially invited to attend. A program of the meeting has been mailed to the headquarters of fire companies and department members of the Volunteer Firemen's Section. A copy will be mailed to any other reader on request.

WHAT is to be done about our aging buildings? Because they met the requirements of building codes when they were built, can they be expected to measure up to modern standards of safety until they go to pieces, like the One Hoss Shay, "All at once and nothing first, just as bubbles do when they burst"? Obviously not—and yet this seems to be the unintended expectation of most building laws. They provide adequate safety for new structures, but old buildings, which form the most considerable part of any mature city, are left to rot until local officials can call them a menace to the safety of the public and order their repair or removal. Most often public opinion blocks even this action until a building is actually ready to fall apart. Thousands of buildings which may be a menace to life in case of fire remain because they still serve some useful purpose, and under present conditions it is impractical to condemn them. The ninety-year-old Halifax Hotel was an example. The recent fire in this building which took 28 lives was reported in the April issue of VOLUNTEER FIREMEN. Such structures make up much of the annual fire loss.

As a means of correcting this situation, it has been suggested that each building, at the time of its erection, be licensed for some definite period of time, during which it may be expected to remain in a reasonably safe condition. Many buildings are designed and financed on the basis of some useful life. The new Federal housing projects, for instance, are designed to last during payment of installments on 60-year loans. There is, therefore, some means of judging the probable useful life of any type of construction.

If building permits were treated as licenses good for some specified period of years depending on location and type of building, the building owner could be required to remove the building at the end of the period, or remodel it to comply with modern standards. Such a plan would regularly get rid of the more hazardous old buildings without hardship on property owners. They could make their plans for renewal or reconstruction long in advance. The plan would be applied to old buildings now existing by providing that such buildings, as they reach the age of sixty or seventy years be removed or made safe in accordance with modern standards.

Exceptions to the law would, of course, be made for buildings of historic or other special interest and others already over the age limit when the law was adopted. In the latter case a few years' warning could be given which would allow owners to provide for reconstruction.

FIRE departments of North Carolina recently proposed a novel means of dealing with the various problems of outside aid and mutual aid. Their plan involves creation by law of a state-wide volunteer fire department. The idea is that every officer and man of a fire department in the state, whether a paid department or a volunteer department, would be a member of this state-wide fire department. As such, they could operate in any part of the state without raising many of the troublesome questions which come up whenever fire departments go to a fire outside of the corporate limits of their own community.

As we go to press comes word that the bill embodying this law has been adopted and is now in effect in North Carolina. Under it State Fire Marshal Sherwood Brockwell becomes Chief of the state-wide fire department. Each local fire chief is a deputy chief in the state fire department and ranking chief in his own town. Other fire department officers hold ranks in the state-wide organization corresponding to those held in their own department.

LAST month 13 departments with 262 men joined the Volunteer Firemen's Section for the first time. In addition 35 departments with 917 men renewed membership. This brings the total enrollment to 647 departments and 14,132 men.

Volunteer Firemen is increasingly popular in a new field—with industrial fire brigades.

The list following, of departments enrolled in the past month, includes four such brigades:

Newington Volunteer Fire Department, Inc., Newington, Connecticut.

McMillen Feed Mills and Central Soya Company, Decatur, Indiana.

Reisterstown Volunteer Fire Company, Inc., Reisterstown, Maryland.

Mahtomedi Fire Department, Mahtomedi, Minnesota.

The A. P. Smith Manufacturing Company, East Orange, New Jersey.

Pequannock Volunteer Fire Department, Pequannock, New Jersey.

Hammond Volunteer Fire Department, Hammond, New York.

Condon Volunteer Fire Department, Condon, Oregon.

Manville Fire Department Association, Manville, Rhode Island.

McLaughlin Fire Department, McLaughlin, South Dakota.

New Braunfels Fire Department, New Braunfels, Texas.

Westvaco Chloride Products Corporation, South Charleston, West Virginia.

Rock Springs Fire Department, Rock Springs, Wyoming.

A Problem Question FOR MAY

Suggested for discussion at company and department meetings this month

90

What steps should be taken to maintain fire apparatus batteries in good condition at all times?

The answer to the problem question for April will be found on page 6.

RESCUE EQUIPMENT EVERY FIRE DEPARTMENT SHOULD HAVE

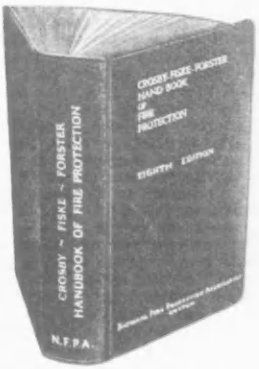
H·H INHALATORS

Officially accepted by the Council on Physical Therapy of the American Medical Association . . . approved by the American Gas Association and the Association of Fire and Police Surgeons. Compact, portable, easy to operate . . . the most widely used and effective resuscitation apparatus known for cases of gas asphyxia, drowning, electric shock, etc.—*Write for demonstration.*

MINE SAFETY APPLIANCES COMPANY
BRADDOCK, THOMAS & MEADE STREETS
PITTSBURGH, PA.
District Representatives in Principal Cities

CROSBY-FISKE-FORSTER

HANDBOOK of FIRE PROTECTION



THE HANDBOOK is the standard reference volume for beginners and experienced men specializing in fire prevention and protection. It is not a manual of fire fighting practice.

The HANDBOOK was first published in 1896. Over one hundred well known authorities in the field have helped in the preparation of this new and greatly enlarged edition.

Eighth Edition
1142 pages; 4¼ x 6½
242 illustrations, 161 tables
Handsomely bound
$4.50 postpaid

NATIONAL FIRE PROTECTION ASSOCIATION **VF May 39**
60 Batterymarch Street, Boston, Mass.

Please send me ..... copies of your Handbook, for which
$ ..... ($4.50 per copy, postpaid) is enclosed.

Name ..... **Address** .....

INDIAN Fire Pumps

Are 1st Choice of the Men Who Know—

And the Men Who Know Are the Men Who Use Them!

THE Smith INDIAN Fire Pump provides a complete **One-Man Fire Department** in a single compact, portable unit. It throws a powerful, 50 ft. continuous, unbroken stream of clear water in any direction. Refillable. Portable by hand or on the back. Always ready at any time, any place. *Low in Price.*

Indians are now used as standard equipment by Rural and City Fire Departments, U. S. and State Forest Services and many others.

In addition to using INDIANS on all grass fires, many departments rely on them instead of the chemical type for spot, roof and chimney fires, overheated stoves, room and partition fires, rubbish fires, etc. No piece of equipment has the many uses of INDIAN FIRE PUMPS. Made strong for hard use. New Rust-Proof Tank.

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FIGHT FIRE WITH INDIANS

N.F.P.A. Membership for Your Company or Department

Membership with unusual advantages is available to fire companies and fire departments through the Volunteer Firemen's Section of the National Fire Protection Association. Here's the simple plan:

Your company or department applies for regular membership in the N.F.P.A. and pays the minimum $10 annual dues. When the application is accepted, the company or department begins to receive at headquarters the monthly bulletins and publications sent regularly to all members of the Association. Also comes a 100-page *Quarterly* Magazine (four times during the membership year), a volume of annual Proceedings (over 400 pages), a Directory of members, and an Index to printed publications. You thus build up a nice fire library. Membership also places at the disposal of the company or department the Information Service of the Association.

Membership Plan Includes VOLUNTEER FIREMEN for Your Company or Department

The publications and services enumerated above are what regular N.F.P.A. members get for their $10 annual dues. The special membership plan of the Volunteer Firemen's Section provides that *in addition* you get VOLUNTEER FIREMEN magazine for the men in your company or department. (The $10 minimum dues allows you to enroll up to 20 men to receive the magazine: 50c per year extra for each man in excess of 20 enrolled.) VOLUNTEER FIREMEN is mailed to each man's home address.

USE THIS COUPON FOR SPECIAL MEMBERSHIP PLAN

If your company or department is now a member, pass this coupon to some other company or department which might like to enjoy the benefits of this plan.

National Fire Protection Association, 60 Batterymarch St., Boston, Mass.:

Please send me a membership application blank. I am interested in your special membership plan for our company or department.

Name .....

Rank .....
(Chief, Sec'y, Capt., etc.)

Name of Company or Department .....

.....

Address .....

$10.00-$3.00-$2.00 EACH MONTH

PYRENE PRIZE LETTER CONTEST

EACH month three fortunate firemen win cash prize awards for telling of effective work done with approved fire extinguishers. The monthly prizes are: first prize, $10.00; second prize, $3.00; and third prize, $2.00. These prizes go to the winners of the Pyrene Prize Letter Contest conducted jointly by the Pyrene Manufacturing Company of Newark, N. J., and VOLUNTEER FIREMEN. To win one of the prizes does not require any fancy writing ability. If you know of a fire where good work was done with an extinguisher just tell the facts in your own way. The judges want to know what type the extinguisher was (carbon tetrachloride, soda-acid, foam, carbon dioxide, calcium chloride, loaded stream or dry chemical). It is not necessary to tell the make of the extinguisher. The contest is open to members of fire departments including organized industrial brigades.

FIRST PRIZE—$10.00

M. E. SCHUBERT, *Secretary*
Volunteer Fire Department
Lost Nation, Iowa

Saved Thanksgiving Dinners

Before Thanksgiving 1937, I was employed as a turkey picker on a turkey ranch. We worked in pairs in separate small buildings heated by kerosene burners. One day a commotion started in the building next to ours and one of its occupants came running toward us yelling "Fire." A turkey had broken loose and upset the fuel tank over the burner and when we got there we saw that kerosene had been splashed clear across the feather covered floor and both it and the wall were a mass of flames. As there was no water nearby we had to resort to beating the fire with sacks, at the same time trying to salvage over 40 prime, dressed birds hanging from the ceiling. We had just decided it was hopeless when a trucker drove into the yard to load the dressed turkeys for market. He saw the situation in a flash, grabbed a small carbon tetrachloride extinguisher carried in the cab and dashed to the burning building. He emptied it over the floor and wall and in a moment all of the fire was out except some flames from the tilted fuel tank. Every one of the fancy dressed birds, as well as the building, was saved from what appeared to be certain destruction.

SECOND PRIZE—$3.00

CLIFFORD D. DENISON, *Chief*
Fire Department
Harrison, Maine

Dangerous Blaze Averted

One very windy day in May a few years ago, as I was harrowing at some distance from the house, I saw a puff of smoke in an open field about a mile away and could see someone running along the road towards the nearest telephone. It was evident that if this fire got out of control it would burn at least two sets of buildings and run about two miles in the woods. I ran to the house arriving just as the alarm blew in, called to my brother to get his soda-acid extinguisher, told the hired man to get the truck out and went for my extinguisher. When we arrived at the fire it was getting out of the control of the few men there, for the wind spread it every time they beat at it. My brother went around one side of the fire with his extinguisher and I took the other side with mine. We were about ten feet apart when they were empty, but the men were able to mop up the remaining fire. It was all out when the fire truck arrived. Had we been two minutes later there might have been a serious fire for there wasn't a water supply for the pumper near enough to have been of any use.

THIRD PRIZE—$2.00

C. P. SWADLEY
Volunteer Fire Department
Grand Prairie, Texas

Rolling Home Saved

One day while going from Grand Prairie to Houston in my truck I overtook a car pulling a house trailer. As I started to pass the trailer I noticed smoke coming from a ventilator on its side. I pulled up beside the car and my helper told the driver to stop. We jumped down from the truck, each with a one quart carbon tetrachloride extinguisher, and ran to the back of the trailer. Opening the door we found a wooden cabinet half burned. One extinguisher was enough to extinguish the blaze and save the trailer and remaining contents. The tourists were very grateful and offered to pay for the service.

HONORABLE MENTION

FRED H. ELDRIDGE, Fire Department, Glens Falls, New York.

JAMES HALDANE, Fire Department, London, Ontario.

JULES TROSCLAIR, Volunteer Fire Department, Opelousas, Louisiana.

CONTEST RULES

1. Contestants in the Pyrene Prize Letter Contest must be members of their local fire department.
2. Letters are to describe actual experiences where an approved fire extinguisher of any make has saved lives or property.
3. Trade names may be used but will be deleted in publication. Publishers reserve the right to edit winning letters to permit publication.
4. Each contestant automatically vouches for the truth of the facts presented from his own or others' experience.
5. Only one letter may be submitted each month.
6. Letters must be legibly written in ink or typewritten on white paper, one side only. Preference will be given to letters not over 250 words in length.
7. Letters received after the 8th of the month will be judged in following month's competition.
8. Monthly prizes in cash will be: 1st, $10.00; 2nd, $3.00; and 3rd, $2.00.
9. Address contest letters to Pyrene Prize Letter Contest, National Fire Protection Association, 60 Batterymarch St., Boston, Mass.

Selected Publications on Fire Subjects

Write for a complete list of N.F.P.A. publications. Following is a partial list of popular and useful books and pamphlets available at the prices quoted. Address: National Fire Protection Association, 60 Batterymarch St., Boston, Mass.

Automatic Sprinkler Systems, Use of by Fire Departments. General principles of fighting a fire in a building equipped with automatic sprinklers.
12 pages, 2 diagrams .....10 cents.

Water Systems for Fire Protection on Farms. A pamphlet prepared by N.F.P.A. Committee on Farm Fire Protection to suggest ways and means for the most efficient utilization of available water supplies in extinguishing farm fires and to present essential features needed to give reasonably adequate fire protection when new water systems are contemplated.
12 pages, 7 illustrations .....10 cents.

Lightning, Code for Protection Against. Nine tenths of the 400 annual deaths from lightning and a large percentage of the property loss due to lightning occurs in rural districts. Lightning rods have demonstrated that they will give buildings positive protection from lightning if properly installed. This publication shows how to install them. Also covers lightning protection for smokestacks, aircraft, ships, trees and live stock in fields.
40 pages, 6 illustrations .....15 cents.

Carbon Dioxide Fire Protection. By Robert S. Moulton, Technical Secretary, N.F.P.A. Use of this form of protection in electrical equipment, manufacturing processes involving flammable liquids, fur vaults and record protection. Characteristics of carbon dioxide, its smothering action on fires, its cooling effect as compared with water and its action on burning gases, liquids and solids. Description of carbon dioxide extinguishing devices, their advantages, limitations and suitability: portable extinguishers, permanent piped installations, electric power house installations, dip tank systems, and room flooding systems.
20 pages, 13 illustrations .....20 cents.

School Fires. A record of 875 school fires reported to the National Fire Protection Association. Includes the story of the Collinwood, Ohio, school fire in which 173 children and 2 teachers perished and 6 other major school disasters involving a total loss of life to 198 persons. Analysis of the fires tabulating causes, type of buildings, places of origin of the fire and the like. Selected reports of typical fires illustrating points of special interest such as the effectiveness of automatic sprinklers and the value of fire drills.
34 pages, 25 illustrations .....25 cents.

Hospital and Institution Fires. A record of 202 hospital and institution fires reported to the National Fire Protection Association. Includes the story of the Cleveland Clinic fire where 124 people died as the result of the hazard of x-ray nitrocellulose film and seven other major disasters involving a total loss of life to 228 persons. Analysis of the fires tabulating causes, type of buildings, places of origin of the fire and the like. Selected reports of typical fires, illustrating points of special interest such as the effectiveness of automatic sprinklers and the value of fire drills.
68 pages, 37 illustrations .....35 cents.

A Model Records and Reporting System for Fire Departments

Size of book, 8½ x 11 inches

87 pages, 27 forms, 7 figures

Price, $2 each, postpaid

This manual suggests a detailed and well-rounded plan that should help to solve many of the problems that now confront fire chiefs in small as well as large cities and towns. It shows how a records and reporting system should operate. It includes copies of the 27 forms considered important in fire department work.

The record forms contained in this book have met with such acceptance by fire chiefs and fire departments that most of the forms have now been separately printed to meet the demand of departments wishing to purchase supplies of the blanks. Write for a price list for the various record forms. If your department has not yet obtained a copy of the Model Records and Reporting System book ask for a circular describing it so that you will have full information on the many reporting blanks available.

National Fire Protection Association

INTERNATIONAL

60 Batterymarch St., Boston, Mass.

RURAL FIRE DEPARTMENTS

I. Equipment, Apparatus

II. Organization

III. Volunteer Fire Department Ordinance and Rules

IV. State Legislation for Fire Department Organization

32 Page Pamphlet Prepared by N.F.P.A. Committee on Farm Fire Protection; Adopted by National Fire Protection Association.

Single copies .....20 cents.

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A Fire Department Manual

Hose

and Hose Couplings

a substantial manual of 44 pages, 6 in. by 9 in., 11 illustrations, containing informative material on the selection, care and testing of hose and hose couplings, compiled from recommendations of N.F.P.A. committees and other authoritative sources. Manual shows how to load hose so as to prevent deterioration and how to handle it at fires to avoid unnecessary damage. Includes a detailed set of specifications for use in buying hose.

Single copies .....**25 cents.**

Put a copy in the hands of every fireman in your department.

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VOLUNTEERS!

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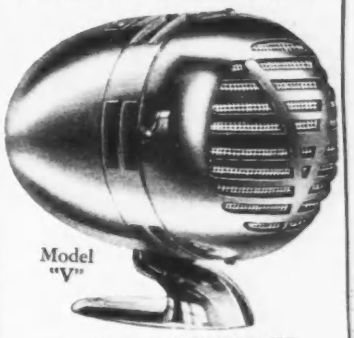

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● NOW! A new siren built especially for VOLUNTEERS. Priced low to fit your purse. Its fourfold value in service and protection pays you to invest in this siren. Investigate **Now.** No obligation.

1. Paves the way to the fire.
2. Protects your car against smash up.
3. Added protection to pedestrians.
4. Gets you there first to save valuable property and lives.

ORDER YOUR SIREN TODAY!

Ask for full particulars in bulletin No. 62.

FEDERAL ELECTRIC COMPANY
8717 SOUTH STATE ST., CHICAGO, ILL.

The "Model A" Super

Which Every Volunteer Fire Department Should Know About

Both 1 Quart and 1½ Quart Sizes

Every volunteer Fire Department should know the exclusive qualities of this first-aid extinguisher which experience shows should be the first to be carried into any fire because:—

FIRST:—
It is safe to use on electrical fires. Fyr-Fyter fluid is not only a powerful fire extinguishing fluid, but a most certain insulation—safeguarding the operator against serious injury or possible death from electrical contact.

AND SECOND:—
It is effective on concealed fires in walls and other "hard to reach" locations and is effective also on fires in greases, oils and the more flammable liquids.

SALESMEN WANTED

If you are interested in adding to your income by spare time work or in building a permanent business for yourself without investment in stock, fixtures, etc., write for our new Dealer's Plan to

THE FYR-FYTER COMPANY
Dept. 20-41 **DAYTON, OHIO**

VITAGUARD

Fire Alarm Systems for Volunteer Fire Departments

PUBLIC ALARM
Diaphone Horn
Projecting Above Roof

REDUCE FIRE LOSSES

Due mainly to inadequate means for announcing alarms, fire losses in communities dependent upon volunteer firemen are excessively high. According to the record, 70% of the nation's annual fire loss occurs in municipalities of less than 20,000 population.

The Vitaguard fire alarm system provides the essential features of reliability and speed in the transmission of alarms. After the initial manual operation of pulling a box, the operation is entirely automatic—the alarm is clearly and distinctly sounded throughout the entire fire district by the Diaphone compressed air horn exactly as transmitted by the box and **directs the firemen to the location of fire.**

Vitaguard fire alarm boxes accessibly and conspicuously located at all points of fire hazard will promote the security of life and property in the community and provide a permanent—and profitable—investment in public safety.

VITAGUARD
CONTROL UNIT

Outstanding features are—Simplicity . . . Low Initial and Maintenance Costs . . . Rugged Construction . . . Automatic Operation of Alarm Equipment . . . May Be Installed by Local Electrician.

Write for complete catalogue.

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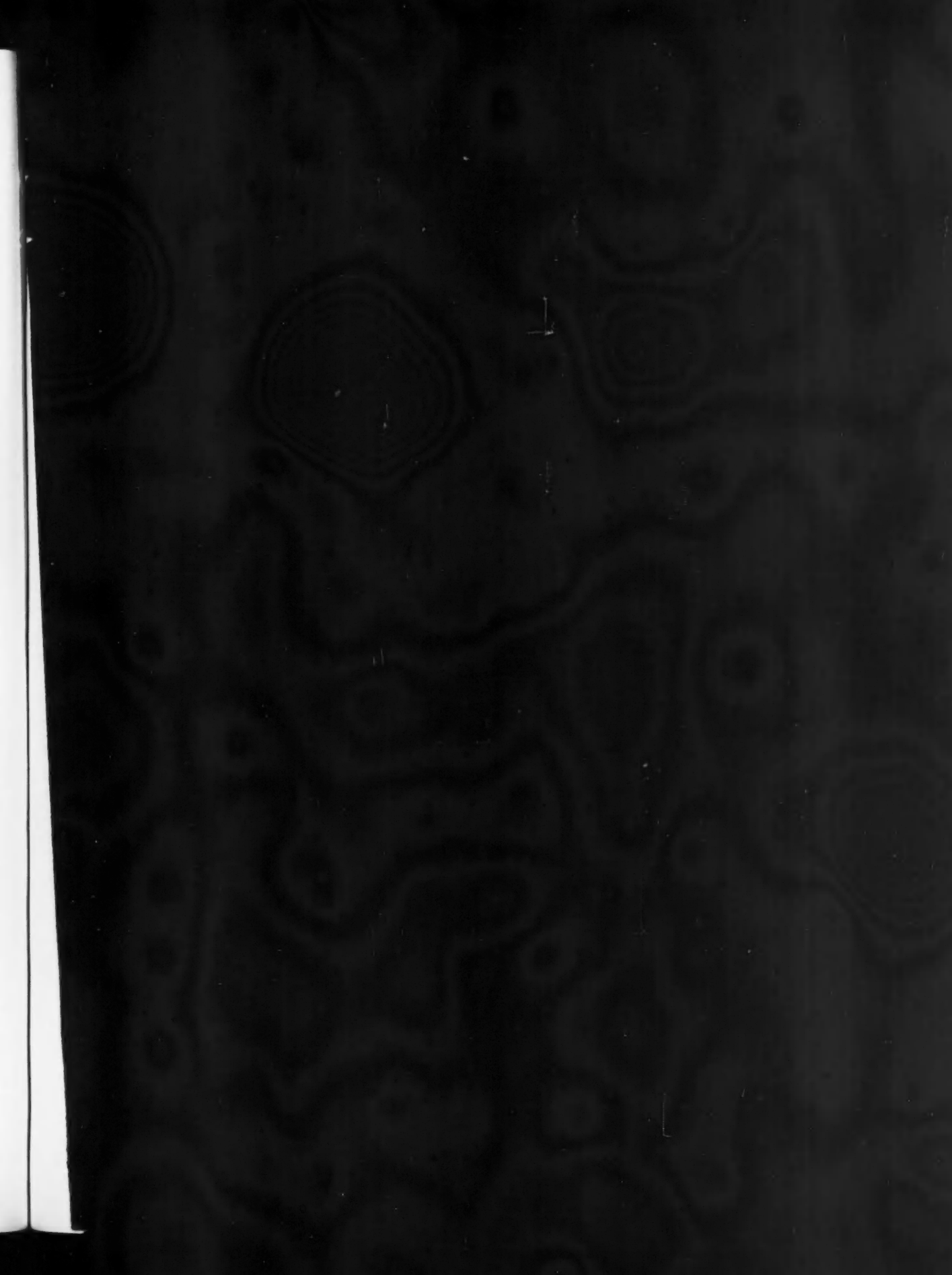
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